DOCUMENT RESUME

ED 217 405 CS 006 728

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TITLE The Effect of Cultural Knowledge on Memory and Language. Technical Report No. 248.
INSTITUTION Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.
SPONS AGENCY Australian Inst. of Aboriginal Studies, Canberra.; National Inst. of Education (ED), Washington, DC.
PUB DATE Jun 82
CONTRACT 400-76-0116
NOTE 37p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adult Basic Education; Adults; Cognitive Processes; Cross Cultural Studies; *Cultural Background; *Cultural Differences; Cultural Influences; Females; Foreign Countries; *Language Usage; Language Variation; *Prior Learning; Reading Comprehension; *Reading Research; *Recall (Psychology)
IDENTIFIERS Australia; United States

ABSTRACT

The effect of cultural background knowledge on comprehension and on the language of recall was investigated using an oral presentation. Fifteen Aboriginal women in northern Australia and 15 American women in an adult education class in Illinois were matched in age and educational level. Two stories were read aloud to the subjects, each based on the medical beliefs and practices of one of the cultures. The stories were read in standard English, after which the subjects were asked to retell the story. The Aboriginal subjects were permitted to retell the story in Australian Creole English if they so chose. The subjects who responded in Australian Creole English tended to use a more heavily creolized variety in recalling the Aboriginal text. Findings provide evidence that general cultural knowledge has a profound effect upon recall, and highlight the potential for misunderstanding in cross-cultural encounters due to different assumptions and beliefs, which affect comprehension, inference, and retrieval processes. (HTH)

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CENTER FOR THE STUDY OF READING

Technical Report No. 248

THE EFFECT OF CULTURAL KNOWLEDGE ON MEMORY AND LANGUAGE

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June 1982

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The research reported herein was supported by the National Institute of Education under Contract No. US-NIE-C-400-76-0116 and by a grant from the Australian Institute for Aboriginal Studies.

CS806720

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Abstract

The effect of cultural knowledge is investigated within the schema theory of comprehension. Australian Aboriginal and American subjects heard two stories, each based on the medical beliefs and practices of one of the cultures. The stories were read in Standard English. After an interpolated task, subjects were asked to recall each one orally. More of their native passage was remembered and elaborated by each group, while recalls of the foreign texts showed a high level of distortion. Aboriginal subjects who responded in Australian Creole English tended to use a more heavily creolized variety in recalling the Aboriginal text. Findings provide evidence that general cultural knowledge has a profound effect upon recall. The implications for cross-cultural communication are indicated.

The Effect of Cultural Knowledge on Memory and Language

Recent research in schema theory has provided evidence that a reader's background knowledge is a significant factor in text comprehension. This theory proposes that a comprehender possesses an abstract structure which subsumes the details in a message, and that comprehension is a constructive process in which the individual's previous knowledge plays a major part. Besides describing the relationship between objects and activities through its structure, the schema contains slots or frames (Minsky, 1975), which represent knowledge about a limited domain. These are instantiated with specific realizations as a text is comprehended (Anderson, Reynolds, Schallert, & Goetz, 1977) and a reader has a sense of understanding as this occurs (Kuipers, 1975). A schema may also guide retrieval by providing a guide for the search process (Anderson & Pichert, 1978).

In this paper, we will investigate the effect of culture-specific background knowledge on comprehension, and we will argue that through membership in a culture, an individual has privileged information which is represented in a rich system of schemata. We will demonstrate that this background knowledge has a pervasive effect on the oral recall of native and foreign texts.

The effect of cultural membership on text recall was first investigated systematically by Bartlett (1932). He had Englishmen read a North American Indian folktale, which was then recalled at increasing time intervals. From an English perspective, recalls were more coherent than the original story, in that subjects tended to "rationalize" odd or incomprehensible features of the text. Bartlett characterized this as an

active process which was affected by "an interplay of individual and social factors" (1932, p. 126).

Most recent work investigating the effect of cultural background knowledge on reading comprehension has focused on story grammar, the structure of the text. Using a sequential recall procedure, Kintsch and Greene (1978) had American college students read and recall a native text (a Grimm fairy tale) and a foreign text (an Apache folk tale). More of the important propositions were recalled from the native passage than from the foreign passage, a finding which led the researchers to conclude that a match between a reader's culturally based story schema and that of the text increases comprehension. However, this finding may be attributable to the inherent difficulty of the structure of the particular foreign text used, a position taken by Mandler, Scribner, Cole, and DeForest (1980). When they presented structurally similar stories to Vai-speaking Liberians and Americans, they found similar recall patterns across the two groups. They claim that while story structure is a critical variable in recall, the knowledge of such structures is universal.

Returning to the substance rather than the form of a text, Steffensen, Joag-dev, and Anderson (1979) demonstrated that content significantly affects reading comprehension when structure is controlled. Two structurally similar letters, one describing an American wedding and the other an Asian Indian wedding, were read by Americans and Asian Indians. For each group, comprehension of the native text was significantly better than that of the foreign one, and reading time was faster. It should be noted that only the study by Steffensen, et al. (1979) included a completely

balanced design; passages portraying two distinct cultural situations were read and recalled by members of each culture.

In this study, the effect of cultural background knowledge on comprehension and on the language of recall is investigated using an oral presentation. A balanced experiment was designed: subjects from two cultures listened to and recalled two stories, each based on one of the cultures. Such a design rules out idiosyncratic aspects of the texts as the source of any differences found in performance. The subjects participating in the study were a group of Aboriginal women living in an isolated bush settlement in Australia and a group of white American women living in central Illinois. The texts described illness and medical treatment from a Western and an Aboriginal perspective. Because health care is a matter of concern for all adult members of a society, it was an appropriate topic for the study: those participating could be expected to have well-developed schemata for the information presented in the native text.

The conceptualizations about physical well-being, the causes of disease, and the procedures for treatment differ enormously between Western and Aboriginal society. Western medicine is based on germ theory and scientific methodology. In the Aboriginal groups of Australia, illness is a facet of the metaphysical system. Disease and death may be attributed to sorcery or to the violation of a taboo. For example, Maddock (1974) notes the belief that "damage to certain religious places, even if unwitting, will cause the death of persons associated with those places" (p. 169). Hamilton (Note 1) claims that the most fundamental difference between Aboriginal and European conceptualizations is the Aboriginal belief that illness is caused by agencies beyond the individual's

control. She suggests that this results in major differences in the attitudes of the two groups concerning the responsibility of individuals for their own well-being. Western people believe they can control the external environment by physical means and they accept some degree of responsibility for their own health. Aborigines do not believe they have such a degree of control over their environment and do not have feelings of guilt about illness.

Treatment in the traditional Aboriginal community takes the form of sorcery, and restoration to health is effected by the local medical practitioner with the aid of the victim's kin. While practices vary in different parts of the country, they often involve the removal of evil influences from the victim's body.

Given the massive cultural differences in conceptualizations about health, illness and treatment, it was expected that stories from the two cultures involving these concepts would be subsumed by different schemata for American and Aboriginal subjects. It was predicted that each group would have a well-developed schema for the native event, which would make possible a high level of comprehension. However, this would not be the case for the foreign passage for either group. Because American subjects had no prior knowledge of Aboriginal medicine and no schema for the text, there would be extreme distortion as they accommodated the content to frames appropriate for Western beliefs. Aboriginal subjects are now relying on Western medicine and are being taught Western concepts and preventative practices, so it was expected they would have some of the structures undergirding the content of the Western text. However, because their acculturation is not complete (Hamilton, Note 1; Stacy, 1975), it

was predicted that their schemata would be "defective" and would distort the text content.

A second thrust of this study involved an analysis of the language varieties used by Aboriginal subjects recalling the two passages. The community in which they live is undergoing rapid acculturation to the majority culture. The people are polylingual, the lingua franca being a form of Australian Creole English (ACE). This creole ranges from a "heavy" form, or "basilect," which is unintelligible to those who do not speak ACE, to a "light" form, or "acrolect," which is intelligible to monolingual speakers of English. Each individual speaker falls along this creole continuum and controls a portion of the total range. (See Bickerton, 1973, and DeCamp, 1971, for a description of the creole continuum.)

It is a well established fact that the level of formality of language used in a given interchange is a function of such aspects of the speech event as the setting, the participants, and the topic of discussion. (See, for example, Halliday, McIntosh, & Strevens, 1964; Labov, 1972.) This is realized in the grammatical structure of utterances or word choice, among other things. In communities in which a creole continuum exists, a more formal linguistic level is associated with the acrolect and a less formal level with the basilect. Thus in a formal social situation, speakers use a creole variety closer to the acrolect while in an informal or intimate one they use a variety closer to the basilect.

In this study, the only aspect of the speech event which varied was the subject matter of the stories. Furthermore, for the Australian group, the two texts represented a traditional and a modern version of medical

beliefs and activities. However, in spite of the fact that most of the important dimensions of the speech event were held constant, it was predicted that Aboriginal subjects would use a heavier creole for the native story than for the Western one because it described deeply embedded cultural events and values which were more completely understood.

Method

Subjects

Fifteen Aboriginal women living at a small federally supported settlement in the Northern Territory of Australia and fifteen American women enrolled in adult education classes at a public school in Illinois participated in the study. Subjects were matched on age and educational level. The age range for Aboriginal subjects was 18 to late 40's, for Americans, 17 to 61. Respective years of formal schooling were zero to twelve and seven to twelve. Due to the difficulty of finding American women who had not completed elementary school or who had no formal education, in about half of the cases American subjects had from one to eight years more education than their Aboriginal counterparts. In spite of this, American subjects were the more naive group because they had no knowledge whatsoever of the medical/religious practices and beliefs of native Australians. Australian subjects were all acculturated to some degree to Western medical practices and found neither of the texts particularly bizarre.

Australian subjects were all polylingual and spoke a non-standard variety of Australian English and/or one or more Australian languages, e.g., Ngalkbon, Djauan, Maiali. All but one were competent speakers of ACE. American subjects were monolingual.

Materials

The experimental passages (see Appendix) were based on Aboriginal and Western concepts of illness and treatment. The Western passage, which was written by the senior author, related how a young boy became ill from eating spoiled food, his mother's reactions, and the treatment he received. The Aboriginal passage was an account given to John Cawte, an Australian psychiatrist who has done extensive cross-cultural research, by a man of the Walbiri tribe (Cawte, 1974). In the text, the Walbiri described an illness caused by the introduction of bones into his body by the spirit of a sacred site. The treatment he received and his attitudes and those of the practitioner towards the illness and its cause are indicated.

Both stories were 346 words long. They were parsed into idea units (IUs), which were verified by two independent judges. There were 114 and 98 IUs in the Aboriginal and Western stories, respectively. T-score, which provides a measure of syntactic complexity based on the average number of words in an independent clause, was 8.4 for each passage.

Design and Procedure

This study was run orally, with each subject tested individually. One of the stories was read aloud to the subject, after which a number of personal data questions were asked. Besides supplying information for matching subjects, these questions functioned as an interpolated task to inhibit short term memory. The subject was then asked to retell the story, keeping it as close to the original as possible. The second story was read, additional personal data questions were asked, and the second story was recalled. The order of the two passages was counterbalanced. After each recall, the subject was asked a number of questions about the passage.

Both stories were read to all subjects in Standard English. However, Aboriginal subjects were told that they could retell the story in English or in creole. No such instructions were given to the American subjects.

Every session was tape recorded in its entirety. Subjects' recalls, all questions and responses were transcribed. The experimenter's reading of the two passages was checked against copies of the two originals to verify that no errors were made that would affect subjects' recalls.

Scoring: Idea Units

A number of variables were analyzed in subjects' recall protocols. First, the number of idea units from the original text that were recalled correctly yielded a score for gist. Second, modifications of the text were assessed. Two principal types were considered: elaborations and distortions. Elaborations are extensions that are fully consistent with the cultural milieu of the text. For example, if a subject described part of the treatment in the Aboriginal passage as "a sort of ritual," a wording that did not occur in the original, that was scored as an appropriate elaboration. Such changes are often considered textbound inferences by members of the culture. The fact that they often cannot be derived from the text can most easily be ascertained by having someone who does not share that background compare the text and the subject's rendering of it.

Distortions are extensions of the text that are not consistent with the undergirding cultural beliefs and values, and they are generally considered errors by those who share the background assumed by the text. These could be attributed to the absence of the appropriate schema for

integrating and storing the content of the foreign passage and, in some cases, to the use of frames from the native schema which distorted the concepts of the story. These were distinguished from a third category, errors which were judged not to be culturally-based, e.g., remembering that the sick man in the Aboriginal text stayed with Miss Smith rather than Mr. Smith. Some of these might also be the result of cultural interference. If so, the scoring used would work against the hypothesis proposed. This category included a very small number of local cultural intrusions which were contradictory to elements in the native story. For example, in the Australian text, a number of men gave blood to the sick man. One Aboriginal subject referred to taking blood from the sick man, a practice found at the settlement where the experiment was conducted. Such cases represent another level of cultural interference, but they were rare and were not scored as such.

Elaborations and distortions were measured on the basis of (a) number of idea units involved or (b) number of words when the material was not attributable to specific idea units. All protocols were scored by the two researchers. Conflicts were resolved by discussion.

Scoring: Language Variation

The creole spoken by subjects who participated in this study has been described in some detail elsewhere (Sandefur, 1979; Sharpe, 1976; Steffensen, Note 2) and will not be discussed here. The following features were chosen for the analysis of the Aboriginal recall protocols:

Verbal Markers:

past tense particle, bin: De bin go. "They went."
transitivity enclitic, -um ∿ -im: idim, "eat"
aspect enclitic, -bad: idimbad, "eating"
locative enclitics, -ab, -ad, -ob, -in: jandab, "stand up;" waibimad, "destroy;" gedob, "get off;" gwin, "go in"

Adjective Marker:

for human noun, -bala: naigidbala, "naked"

Prepositions:

locative, langa ∿ la: la Katherine, "to Katherine"
genitive, blanga ∿ bla: bla mai sista, "my sister's"

Pronouns:

invariant reflexive, mijelb: De bin megim mijelb don. "They turned themselves into stones."
third-person plural, alabad: Alabad abi. "They're happy."

Phonological Processes:

reduplication: wokwok, "walking;" lilwanlilwan bad, "little birds"
vowel lengthening: Imin gi:lim, "He hit (him) many times."

Lexical Items:

negative, nomo: Nomo idim dad lad beri. "Don't eat those berries."
"now," na: Imin go na. "He has just gone."
"always," ala: Imin ala drink. "He always drank."
"stomach, belly," binji: bla im binji, "his stomach"
dubitative particle, gen: Im--gen--dad debildebil . . ., "He - (mistake) - the devil . . ."
tag question particle, indid: Imin go, indid? "He went, didn't he?"

These features were chosen because they represent a range of styles. For example, the past tense particle bin occurs in creole varieties which are quite close to English. This is particularly true when it is contracted with the third-person singular pronoun: Imin wok, "He walked." Reduplication, which performs a number of functions (Steffensen, 1979), is a process found in more heavily creolized styles. Vowel lengthening occurs in very heavy forms of the creole as a means of intensifying.

A wide range and high frequency of these indicators are found in speech varieties close to the heavy end of the continuum or the basilect while a narrow range and low frequency are found in varieties close to the lighter end, the acrolect. As varieties approach the basilect, a greater number of creole features are found throughout the phonological, lexical and syntactic systems. For example, in a heavy variety the concept "snake" is realized as jineg, while in a lighter variety it is realized as sinek. Because such features are entailed by those analyzed, it was not necessary to score them although they were important determinants of the variety of each protocol.

Results

Story Recall

The effects of three factors--nationality, story order (between-subjects) and story (within-subjects)--were evaluated on seven dependent measures: (1) number of idea units of which the gist was recalled, (2) number of idea units elaborated, (3) number of idea units distorted, (4) number of idea units on which trivial (not culture-based) errors were made, (5) number of words of elaboration not attributable to specific idea units, (6) number of words of distortion not attributable to specific

idea units, and (7) total number of words of recall. Separate analyses of variance were performed for each measure. Although the analyses were not independent, this procedure was chosen in order to facilitate comparison among various experiments of this type, where results of univariate ANOVAs are reported.

The analyses of theoretical interest concerned the nationality x story interactions, and all were statistically significant except on the trivial errors. No other interactions reached significance. Table 1 displays cell means for the nationality x story interactions for each dependent measure summed over story order. The nationality x trivial errors interaction, which was not statistically significant, was also the one of least theoretical interest: trivial errors are not relevant to cultural background by definition.

Insert Table 1 about here.

Greater gist recall and appropriate elaboration of the native passage along with less gist recall and distortion of the foreign passage were characteristic of both groups of subjects. The results concerning elaboration and distortion of the texts in particular indicate the crucial importance of a shared knowledge base between the sender and the receiver of a message--either oral or written--for discourse comprehension.

There was one statistically significant main effect: On the gist recall measure, more idea units were recalled correctly for the Western story than for the Aboriginal story (means 20.30 and 16.07; $\underline{F}(1,26) = 5.22$, $\underline{p} < .05$). However, the nationality x story interaction on this measure precludes the interpretation that the Western story was the easier

one to recall for all subjects. This probably reflects the fact that Aboriginal subjects had far more knowledge about Western health practices than Americans had about Aboriginal ones.

Responses to debriefing questions were not tabulated but were used to support the conclusions drawn from the recall protocols.

Language Variation

Results reported in this section pertain only to the Australian subjects. For nine of the fifteen Aboriginal women, no creole indicators appeared in the recalls of either story. For the other six subjects, Table 2 presents the number of different creole indicators (types) used in recalling each story, along with the percentage of total words in their recall protocols which were creole indicators (tokens).

Insert Table 2 about here.

Due to violation of the assumption of normal distribution, two-tailed t-tests for related samples were performed instead of one-tailed tests which could have otherwise been used in this case, on the creole data. Results approached statistical significance for the number of creole types ($t(14) = 2.086$, $p = .0558$). For percentages of creole tokens found in the Australian subjects' recall protocols, an arcsin transformation was applied. Results of the t-test with these transformed data indicated that a significantly greater percentage of creole tokens appeared in the recalls of the Aboriginal story ($t(14) = 2.197$, $p < .05$).

Discussion

Story Recall

American subjects provided very strong support for the claim that cultural knowledge is an important factor in understanding and remembering a text. For the Western story, they had access to a schema in which to incorporate the details of the particular event described, and their major task was the instantiation of these details. This occurred at a much higher level than for the foreign text (27% and 15% of all IUs, respectively). The claim that comprehension was guided by a structure representing prior knowledge is also supported by a higher elaboration rate for the native than for the foreign text (3.4 and .2 IUs respectively). As information from the text was integrated into the schema and then recalled, subjects were not able to maintain the distinction between textual and generic details. Information that had not been presented in the passage was included as frames were instantiated with "default values" (Kuipers, 1975). For example, the text stated only that the mother took her son to the doctor, but six subjects "remembered" that she called first to make an appointment, the normal procedure in Western health care. Furthermore, cause-effect relations which had been only implied in the text were often made explicit (indicated by underlining):

AM 15: And she felt very bad <u>because</u> she knew then that the egg sandwich was what had made him sick.

AM 2: . . . and he was vomiting, <u>and so</u> she took him to a doctor's.

Such elaborations reflect the usual relationships of these events and states, which were elicited during recall. Such reactions were missing both in the

Aborigines' protocols and in their responses to debriefing questions. Their absence supports the claim that personal responsibility and guilt are not aspects of traditional Aboriginal medical beliefs (Hamilton, Note 1).

As in an earlier cross-cultural study (Steffensen, et al., 1979), there was extensive distortion of the foreign passage. In American subjects' protocols, an average of 6.5 IUs of the Aboriginal text were distorted, and there was an average of an additional 11.1 words of distortion that were not directly related to IUs. In the passage, a description is given of how a sacred animal spirit leaves bones in the sick man's body. They are removed by a native doctor, who brushes the victim with a eucalyptus branch. This was a confusing event for American subjects, and bits of the content in the text were instantiated to the frames of various Western schemata. One subject apparently incorporated the text reference to "a holy animal from the Dreaming" into a schema for parasitic illness and "recalled" that a cure was effected by removing these parasites:

AM 15: And then the man took branches and removed the animals.

Another presented a more complex "rationalization" (Bartlett, 1932) in which the animal became the disease vector and the bones introduced into the victim's body in the story were transformed into an illness involving the bones:

AM 21: . . . he had got some disease from an animal. And he had trouble with his bones.

Still another had only one partially correct detail, which she incorporated into what might be labeled a calamity schema:

AM 9: Well, all I can remember is the the animals, eating people.

Details of the medical rituals, when they were recalled at all, were assimilated to American cultural practices. For example, Aboriginal kinsmen assisting in the treatment provide blood for the victim by cutting their arms; the sick man drinks it. This became a transfusion in American protocols. One subject recalled:

AM 14: I didn't exactly hear the word you said, how they gave the transfusion, but it seems barbaric.

Another had the men cutting their wrists rather than their arms.

Perhaps the most telling evidence for the difficulty American subjects had with this passage was the statements they volunteered:

AM 11: I know what you read but I can't quite come out--put words.

AM 2: This never did make sense to me.

AM 4: I'm now drawing this big blank.

These comments seem to us to be exactly right: subjects did not possess the schema necessary for understanding, retaining or retrieving the content of the passage. It was quite clear from their performance that they were not able to integrate the content of the story into a coherent whole or even to retain many of the details. We attribute this to the fact that they did not have the conceptual framework assumed by the narrator.

An examination of the Australian protocols shows that Aboriginal subjects, like American subjects, produced culturally-motivated elaborations of the native text and distortions of the foreign text. In the recalls of the native text, for example, they intruded a great deal of information that was consistent with the story but which was not explicitly mentioned and was therefore not available to American subjects. The warning given

to the man who became sick ("An old man told him, 'Watch out for animal dreaming.'") was made much more specific. First, one subject specified it as a place:

AB 2: You don' wanna go dere. Im dangerous place.

Another added the information that trespassing on the site caused the problem:

AB 3: An old man--come and told him not to go--walk through that, or step on it, you know, walk on it.

Aspects of the treatment, such as giving blood, were also amplified as subjects intruded information about both the participants and the procedures for this rather common event:

AB 1: So he got coupla mans from his tribe to cut their arm and budum--blood in a dish fo im--for him.

AB 14: . . . imin baindim razor blade langa dat . . . (he found a razor blade in the dirt . . .)

AB 13: . . . the men sit around in a circle . . .

The question might be asked why native story scores (total number of words and gist recall, Table 1) were lower for Aboriginal subjects than for American subjects. The most reasonable explanation is the extreme embarrassment some of the women showed about the material in the Aboriginal passage. This reaction, which probably reflects the Western tradition of ridiculing such beliefs, made some of them quite reluctant to retell the story.

In the case of the foreign passage, Aboriginal scores were higher than American scores on the average number of words of recall (147.7 vs. 125.4) and of elaboration (17.1 vs. 6.9). Furthermore, when mean proportional scores are calculated for IUs elaborated and distorted,

Aboriginal scores were also higher than American ones. This is evidence of the Aborigines' greater knowledge of the American system. Patterns of interference are similar to those in American foreign text recalls. For example, eating contaminated food, the cause of the child's illness, tended not to be understood or remembered. This, we would argue, reflects the absence of an appropriate schema. On the other hand, there is a level of interference which is evidence of a degree of acculturation to the Western system, e.g., events in the story were understood in terms of health problems, such as malnutrition, that have been focused upon by Western practitioners. Thus one subject remembered correctly that the doctor weighed the child and said that he was too thin, but feeding the child became part of the response to the visit to the doctor, rather than the precipitation event.

In her responses to the debriefing questions, this subject provided further evidence that she did not have the background knowledge undergirding the text:

Exp: How did the mother know the little boy was sick in the first place?

AB 5: By not eating.

Exp: And - um - did the doctor say what made him sick?

AB 5: He was starved, gen.

Exp: What is the mother going to do so Peter won't get sick again? How is she going to keep him well?

AB 5: By giving him food, gen.

"Gen" is a dubitative which marks uncertainty, a mistake, or pretend play (Steffensen, Note 3). By using this marker, the subject was encoding her

doubt about her answer, but she obviously did not have a correct alternative available.

Subjects' recalls and answers to debriefing questions showed a basic misunderstanding of the information presented in the text. Clearly, much of the content did not fit subjects' conceptualizations of the causes of illness, and it was distorted as it was filtered through a grid formed by native concepts or those stressed by Western practitioners.

Language Variation

Aboriginal subjects were told that they could retell the stories in either English or ACE. It was expected that in all cases a lighter creole variety would be used for the Western text and a heavier variety for the native text. This was predicted because a creole continuum is described as ranging up to the target language, in this case, Australian English. It was anticipated that for those subjects whose speech is close to the acrolect, only a very limited number of features (or none) would occur in their protocols of the Western story, while more features would occur in their protocols of the native text. For those whose speech falls closer to the basilect, there would be a higher occurrence of features in both recalls, with more in that of the native story.

The results suggest that the linguistic situation in this community is more complex than previously realized. The fact that nine subjects used none of the creole features scored for either passage indicates that the language situation is one of diglossia for many speakers.[1] Ferguson (1964) coined this term to describe fully bilingual speech communities in which the choice of code is determined by characteristics of the speech event.

One language is identified as the intimate code and is used among friends, in the home, and in informal situations. The other is characterized as the formal code and is used in business, government, and when speaking to strangers.

Nine women had apparently decided that English was the appropriate code for the task involved (an educational study using the trappings of Western scientific methodology, conducted by a white woman) and acted accordingly. Their protocols are similar, in terms of the absence of marked language variation, to those of American subjects. Six subjects produced protocols with creole features. Of these, one showed essentially no variation across the two texts. (Intriguingly, her recall scores were also about the same for both texts.) The remaining five speakers showed the predicted variation: They used a heavier creole for the Aboriginal than for the Western passage. This finding can be interpreted as showing two aspects of cultural affiliation. Just as subjects were able to recall more of the native text because they were more familiar with the assumed background, they probably used a heavier creole for the native text because they recognized it (probably at a subconscious level) as appropriate for the system of beliefs represented in the text.

The use of the heavier creole for the native text also suggests the importance of topic for the choice of language variety in this particular context. Even though the setting and participants remained the same, the content of the native story appeared to override considerations of formality or intelligibility for those subjects who chose to respond in the creole, and they exhibited the same priority of content by shifting toward the basilect in the native story recall.

It has been demonstrated that Aboriginal children will draw pictures reflecting either the indigenous setting or the introduced setting depending upon whether instructions are given in an Aboriginal language or English (Cawte & Kiloh, 1967). We have shown the reverse side of the coin: repeating a story based on Aboriginal concepts and assumptions causes subjects to shift toward a more heavily creolized variety than that used for a story based on Western concepts and assumptions. There is agreement between code, topic, and knowledge in both cases.

Conclusion

In important respects, the findings of this study parallel those of an earlier cross-cultural investigation of comprehension using a reading/written recall methodology (Steffensen, et al., 1979). Subjects recalled more of the story related to their own culture and elaborated it by supplying frames with default values when specific values were not included in the text. Subjects did not remember as much of the foreign story and when they did partially recall the content, it was often distorted. The actual form these distortions took can be traced in a number of cases to the effect of accommodating textual material to frames from the native schemata.

While similarities between recall after listening and after reading were not systematically investigated, this study supports the claim made by a number of researchers (King, 1968; King & Maddil, 1968; Kintsch, Kozminsky, Streby, McKoon, & Keenan, 1975; Kintsch & Kozminsky, 1977) that a common core of comprehension processes underlies both modalities. The evidence from this study takes on added importance when one considers that

the subjects participating had little or no formal education and were thus quite different from the typical university-level subject.

The analysis of creole tokens in Aboriginal protocols raises the possibility of a similar relationship between background knowledge and language variety in the speech of those with primary competence in non-standard American dialects. It may be the case that when young non-standard or creole speakers are asked to discuss a familiar topic in, say, a testing situation, there will be a strong tendency to do so in the familiar language variety. They will display greater knowledge, but they will do so in a stigmatized code. While these results are only suggestive, they merit further consideration.

The results of this study highlight the potential for misunderstanding in cross-cultural encounters due to different assumptions and beliefs, which affect the comprehension, inference and retrieval processes. At a specific level, there are clear implications in the level of distortion of the Western text by Aboriginal subjects for the delivery of health care services. If there is to be a high rate of compliance, practitioners should strive to integrate relevant medical information into the indigenous belief systems to make it comprehensible and possible to retrieve (see Steffensen & Colker, 1982).

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APPENDIX

Two Stories About Illness and Treatment

Aborigine Story

This man was sick that Queensland way, really sick. Those people reckon animals get into people. He went out droving through Alexandra about three years ago, through to Lake Nash along the Georgina. He was camping on the river. He saw an old Aboriginal grave. An old man told him, watch out for animal Dreaming. That old man's name was Albert. At night time, a holy animal from the Dreaming came. The man felt full inside of animal bones, through his legs, belly, chest, head. He got very sick. It was a holy animal from the Dreaming. They didn't tell him what sort. They've got different animals. It was a wild looking thing, a white color all over, with a black face and front. It was different from a cat or dog. It had a big head, sharp teeth. He didn't eat meat, only people. He gets into your heart, belly, chest, neck - puts in bones. Then he gets out.

They took the sick fellow to a doctor man at Jarra in a car belonging to an Aborigine boy. They carried him. He couldn't walk, couldn't eat. He talked a little. That Albert met him, and he took him to camp. They lay him down on a tarp. Albert put bushes and branches across his arms, tied on. Then he brushed the bones out of him with a branch. The man saw them on the tarp. There were two big shin bones, old and dry. There were a lot of little bones. After that, they gave him blood. A lot of men - about twenty - cut their arms with a razor blade and string on arm. After he drank the blood, he got right straight away. He could eat, drink

all right. He paid them all fifty dollars. He stayed two weeks at Lake Nash, and a teacher named Mr. Smith looked after him. That man won't go away droving anymore. He might get sick. Albert told him that was a common thing there - for animals to leave bones in people.

Western Story

This woman had a terrible time last week. Her little boy, Peter, got sick. She noticed that he wasn't eating right. He wouldn't take his vitamin pills either. She thought he was uncomfortable because of the heat. She cooked some special food for him, but he wouldn't eat it. He did have some orange drink.

Then the woman noticed that Peter's face was very red. He and his sister Helen were watching TV. He had a fever. She gave him some Aspro. He said his stomach hurt. She found some medicine for that, too.

When he started vomiting, the woman called her aunt who's studying nursing. Her aunt said there was some flu going around. But she said Peter's mother should take Peter to the doctor. The doctor was very busy but she wanted him to see Peter. His office was crowded with people.

The doctor weighed Peter and said he was too thin. He listened to his heart. Finally he said he needed some blood for a test. He took a big needle and he jabbed it into Peter's arm. Peter really cried. His mother held him and explained the doctor was trying to help him get better. The doctor said Peter had picked up something that had upset his stomach. He didn't say what. It was probably something he ate.

Peter's mother felt really bad. A few days ago, when she was shopping with Peter and Helen they stopped for something to eat. The place wasn't very clean or tidy, but they were hungry and tired so they got some food there anyway. Peter said his egg sandwich didn't taste good, but she told him to eat it and stop complaining.

Peter didn't like the medicine he had to take. He said it tasted terrible and cried every time his mother gave it to him. She gave it to him every day and he began to get better. She still doesn't know why she bought food in that dirty place and let him get sick.

Footnotes

This research was supported by the National Institute of Education under Contract No. US-NIE-C-400-76-0116 and by a grant from the Australian Institute for Aboriginal Studies. I would like to thank Gavin Seagrim, who discussed the proposed study with me at length and suggested the topic of the passages, which made the findings far more valuable than they would have been with a different topic. John Cawte kindly gave me permission to use a text he had collected during his fieldwork. The Bamyili Town Council allowed me to work in the community and the Australian National University appointed me a Visiting Fellow in the Linguistics Department, Research School of Pacific Studies, for the duration of my stay in Australia. I am very grateful to all of the above.

[1]The caveat must be added that some groups also use an Aboriginal language. This adds another dimension to the speech situation.

Table 1

Means and Results of Significance Tests

for Nationality X Story Interactions

	Americans		Aborigines		
Measure	Western story	Aboriginal story	Western story	Aboriginal story	$F(1,26)$
Total words	200.60	125.40	147.73	175.40	13.13*
Gist recall (IUs)	27.27	15.07	13.33	17.07	18.50*
Elaborations (IUs)	3.40	.20	1.07	5.13	39.17*
Distortions (IUs)	.73	6.47	4.13	.47	71.95*
Trivial errors (IUs)	1.47	1.73	1.00	2.07	.83 n.s.
Elaborations (words)	33.53	6.87	17.13	31.00	10.02*
Distortions (words)	1.47	11.07	24.20	2.07	12.33*

* $p < .01$

Table 2

Creole Indicators in Aboriginal Subjects' Recalls of Western and Aboriginal Texts

Speaker	Number of Indicators*		Percentage of Indicators**	
	W	A	W	A
MB, #2	2	7	4	12
MyB, #5	4	11	12	26
LB, #8	1	5	0.8	2
MK, #9	7	5	20	18
RyB, #12	1	9	2	16
RB, #14	11	13	24	38

*Of a possible 20.

**Based on total number of indicators and words in protocol.